CHARLES DARWIN UNIVERSITY

Family Name	
Given Names	
Student Number	
Teaching Period	Semester 1, 2017

FINAL EXAMINATION	**DURATION**
SBI283 – Immunology	Reading Time: **10** minutes Writing Time: **120** minutes

INSTRUCTIONS TO CANDIDATES

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

No calculators are permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	**EXAMINATION MATERIALS TO BE SUPPLIED**
No additional printed material is permitted	1 x 20 Page Book

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Section A

Fill in the blanks

Total No of Marks for this section: 20

This section should be answered on the Answer Sheet provided. Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

Marks for each question are indicated.

Question 1

Conditions in which the immune system attacks self-antigens are known as_____.

(Marks: 0.5)

Question 2

T cells express membrane molecules including_____, _____, _____, _____ and _____ that play accessory roles in T cell function or signal transduction

(Marks: 2.5)

Question 3

Lymphoblasts proliferate and differentiate into _____ or _____ cells

(Marks: 1)

Question 4

There are two well defined subpopulations of T-cells: _____ and_____.

(Marks: 1)

Question 5

In mammals, T-cell development occurs in the _____, while B-cell development occurs predominantly in the _____.

(Marks: 1)

Question 6

Upon entering the thymus, thymocytes are classified as double _____ with regard to coreceptor; before exiting as single-positive, naïve T cells, they pass through a period in which they are double _____.

(Marks: 1)

Question 7

_____is the pluripotent stem cell that gives rise to all blood cells.

(Marks: 0.5)

Question 8

Carbohydrate chains attached to the C_H2 domains of IgA, IgD, and IgG are believed to provide space for _____

(Marks: 0.5)

Question 9

TCR's V region has _____hypervariable regions which is equivalent to _____ of Abs.

(Marks: 1)

Question 10

TCR engagement with Agic peptide –MHC may induce _____ or _____

(Marks: 1)

Question 11

SPR allows the characterisation of _____ and _____of Ag and Ab interaction.

(Marks: 1)

Question 12

The examples of enzyme conjugates in ELISA test are _____, _____ and _____.

(Marks: 1.5)

Question 13

B-cell hybridomas are formed by fusion of_____ with_____. They are capable of _____growth and are used to produce_____.

(Marks: 2.0)

Question 14

Cytokines share many properties with _____and _____.

(Marks: 1)

Question 15

Alpha-feto protein (AFP) is normally expressed by _____and normal _____

(Marks: 1)

Question 16

_____and _____are two functions of bone marrow stromal cells with respect to B-cell development

(Marks: 1)

Question 17

B-cell proliferation is triggered by _____, _____ and _____. Each of these cytokines is secreted by activated T_H cells thus their action is_____.

(Marks: 2)

Question 18

_____ are proteins that inhibit the activity of various cytokines

(Marks: 0.5)

Section B

Short Answer Questions

Total No of Marks for this section: 30

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated.

Question 1

IgM has ten antigen-binding sites per molecule, whereas IgG only has two. Would you expect IgM to be able to bind five times as many antigenic sites on a multivalent antigen as IgG? Why/why not?

(Marks: 2)

Question 2

Adaptive immunity exhibits several characteristic attributes, which are mediated by lymphocytes. List four attributes of adaptive immunity and briefly explain how they arise.

(Marks: 2)

Question 3

How do cytokines mediate specific results in different cell types?

(Marks: 2)

Question 4

List four types of antigen delivery strategies

(Marks: 2)

Question 5

What is the role of the invariant chain (Ii)?

(Marks: 2)

Question 6

List three types of purified macromolecules that are currently used as vaccines?

(Marks: 2)

Question 7

Give examples of mild and severe consequences of immune dysfunction. What is the most common cause of immune-deficiency throughout the world today?

(Marks: 2)

Question 8

List out the properties of immunogen contribute to immunogenicity?

(Marks: 2)

Question 9

Briefly outline different types of graft rejections?

(Marks: 2)

Question 10

In the early days of experiments designed to detect the T-cell receptor, several different research groups found that antibodies directed against immunoglobulin proteins appeared to bind to the T-cell receptor. Given what you know about the structure of immunoglobulins and the T-cell receptor, why is this not completely surprising?

(Marks: 2)

Question 11

List out the common syndromes of primary immunodeficiencies

(Marks: 2)

Question 12

Graft versus host disease (GVHD) frequently develops after certain type of transplantations; a. briefly outline the mechanism involved in GVHD and b. under what conditions is GVHD likely to occur?

(Marks: 2)

Question 13

Briefly explain about the Oncofetal tumor antigens

(Marks: 2)

Question 14

What are the major differences between transgenic mice and knockout mice and in the procedures of producing them?

(Marks: 2)

Question 15

Illustrate the factors that impact cellular response towards cytokines

(Marks: 2)